

CLAIMS

- Sub B2
1. A device for the aiming and the visual indication of a reading area of a coded information reader, comprising:
- means for emitting a light beam;
 - 5 - means for deflecting at least one first portion of said light beam so as to generate at least two different beam portions active on at least two different zones of a reading area of a coded information reader along at least two different optical paths;
- 10 characterised in that said means for deflecting at least one portion of said light beam consists of a refractive optical element.
2. A device according to claim 1, further comprising means for collimating the light beam.
- 15 3. A device according to claim 1 or 2, wherein said means for emitting a light beam comprises a LED emitting a light beam.
4. A device according to ~~any one of the preceding claims,~~ ^{claim 1} wherein said refractive optical element comprises first and second opposed faces, respectively for collecting the light beam and projecting said at least two beam portions on said reading area, wherein an optical axis Z is defined into said refractive optical element and said second face comprises at least one first portion of surface inclined by
- 20 a predetermined angle α with respect to said first face and adapted to deflect said at least one first portion of light beam by a predetermined deflection angle β with respect to said optical axis Z.
- 25 5. A device according to claim 4, wherein said second face comprises two first surface portions, each one inclined by
- 30 a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of light beam by a predetermined deflection angle with respect to the optical axis Z.

6. A device according to claim 4, wherein said second face comprises four first surface portions, each one inclined by a predetermined angle with respect to the first face and adapted to deflect a corresponding portion of light beam by a predetermined deflection angle with respect to said optical axis Z, so as to define, in said refractive optical element, a poly-prismatic structure having a substantially pyramidal shape with a rhomboidal base.

7. A device according to ^{claim 1} ~~any one of the preceding claims~~, wherein said refractive optical element also comprises means for transmitting without any deflection at least one second portion of light beam towards said reading area.

8. A device according to claim 7, wherein said means for transmitting without any deflection at least one second portion of light beam towards said reading area are provided, in said refractive optical element, centrally with respect to said first inclined surface portions.

9. A device according to claim 7 ~~or 8~~ when dependent on claim 4, wherein said second face comprises at least one second surface portion which is substantially flat and parallel to said first face for collecting the light beam, said at least one second surface portion forming said means for transmitting without any deflection said at least one second portion of light beam towards said reading area.

10. A device according to claim 7 ~~or 8~~ when dependent on claim 4, wherein said refractive optical element comprises a through hole extended between said first and second faces and coaxially formed with respect to said optical axis Z, said through hole forming said means for transmitting without any deflection said at least one second portion of light beam towards said reading area.

11. A device according to ^{claim 1} ~~anyone of claims 1 to 3~~, wherein said refractive optical element has a cross section smaller than that of said light beam.

12. A device according to ~~claim 4 when dependent on~~ claim 2, wherein said collimation means comprises a collimation lens fixedly associated with said refractive optical element at said first face for collecting the light beam.
- 5 13. A device according to claim 4, wherein said second face comprises at least one first peripheral surface portion inclined by a predetermined angle α_1 with respect to said first face and adapted to deflect said at least one first portion of light beam by a predetermined deflection angle
- 10 β_1 with respect to said optical axis Z, and at least one second central surface portion, inclined by a predetermined angle α_2 different from α_1 , with respect to said first face and adapted to deflect said at least one portion of light beam by a predetermined deflection angle β_2 , different from
- 15 β_1 , with respect to said optical axis Z.
14. A device according to ^{claim 1} ~~any one of the preceding claims~~, further comprising an amplitude mask adapted to impart a predetermined profile to said at least two different beam portions.
- 20 15. A device according to claim 14 when dependent on claim 2, wherein said amplitude mask is arranged between said collimation means and said refractive optical element.
16. A device according to claim 4, wherein said at least one first inclined surface portion of said refractive optical element is substantially plane.
- 25 17. A device according to claim 4, wherein said at least one first inclined surface portion of said refractive optical element is substantially cylindrical and convex.
18. A device according to claim 17, comprising at least one
- 30 diverging lens arranged upstream of refractive optical element in correspondence of said at least one first inclined surface portion.
19. Optical element for the aiming and the visual

indication of a reading area of a coded information reader, comprising means for deflecting at least one first portion of a light beam so as to generate at least two beam portions adapted to be projected on at least two different zones of a reading area along at least two different optical paths, characterised in that said optical element is a refractive optical element.

20. Optical apparatus for reading information in a reading
area, characterised in that it comprises an aiming device
10 according to ^{claim 1} ~~any one of claims 1 to 18.~~

Add B' \rightarrow

add